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EXAMINER	
CHAWAN, SHEELA C	
ART UNIT	**PAPER NUMBER**
2625	7

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/821,044	SMITH, DAVID C.	
	Examiner	Art Unit	
	Sheela C Chawan	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 March 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,14-26 and 30-38* is/are rejected.

7)☒ Claim(s) *11-13,27-29,39* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 May 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 6.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Preliminary Amendment

1. Preliminary Amendment filed on June 12, 2001 has been entered.

Drawings

2. The drawings are objected to because In fig 2A memory block should be label to 220 and not 230. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 U.S.C. § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1- 4, 6-10,17-20, 23-26, 33-37 and 38 are rejected under 35 U.S.C. 102(e) as being anticipated by Russo et al. (US. 6,330,345 B1).

As to claims 1, 33 and 36, Russo discloses a method of capturing an acceptable fingerprint image comprising the steps of (abstract, column 2, lines 31- 38).

(a) capturing an initial fingerprint image (column 2, lines 5- 10) at a nominal image integration time (column 2, lines 4- 10);

(b) capturing a first intermediate fingerprint image at a first intermediate image integration time (column 3, lines 50- 67, column 4, lines 1- 5, column 8, lines 38 – 51, column 10, lines 2-13);

(c) performing an image darkness test (column 3, lines 3- 12, 17- 27, column 6, lines 3- 31, column 8, lines 38- 51, fig 3, item 320, is a sensor device which performs darkness test on fingerprint image); and

(d) performing (column 6, lines 32- 41) an image definition test (fig 3, item 350, performing a diagnostic correction on fingerprint image, column 3, lines 39- 67, column 4, lines 1- 5).

As to claims 2 and 18, Russo discloses the method further comprising a step (e) of capturing a subsequent intermediate fingerprint image at a subsequent intermediate image integration time prior to said step (fig 3, item 350, performing a diagnostic correction on fingerprint image column 3, lines 39- 67, column 4, lines 1- 5) (d) when said step (c) results in an unacceptable darkness level (column 6, lines 32- 51).

As to claims 3,19, 34 and 35, Russo discloses the method further comprising repeating said step (e) at additional subsequent intermediate integration times until said step (c) results in an acceptable darkness level (column 8, lines 36- 62).

As to claims 4 and 20, Russo discloses the method wherein said intermediate integration times are within a range of times that includes said nominal image integration time (column 2, lines 5- 10, column 3, lines 50-67).

As to claim 6, Russo discloses the method further comprising repeating said steps (b), (c), (d), and (e) until said step (d) results in an acceptable image definition level (column 3, lines 50- 67, column 4, lines 1-5).

As to claim 7, Russo discloses the method wherein said step (c) further comprises the steps of:

(f) calculating (abstract, column 3, lines 60- 67, column 6, lines 3-16), average darkness values (column 6, lines 3-16) for a plurality of image darkness test lines (column 6, lines 3-16, column 8, lines 36- 47, column 9, lines 1-67, column 10, lines 1-6);

(g) verifying that overall image darkness is acceptable (column 2, lines 31- 38); and

(h) verifying that image darkness distribution is acceptable (column 2, lines 31-38, column 5, lines 53- 67, column 6, lines 1-51).

As to claims 8, 23, 24 and 38 Russo discloses the method wherein said step (f) further comprises calculating average darkness values for a plurality of image darkness lines arranged in pairs of image darkness lines, said pairs of image darkness lines situated within an expected image capture region (column 4, lines 40- 67, column 6, lines 3-16, column 8, lines 36- 47, column 9, lines 1-67, column 10, lines 1-6);

As to claims 9 and 25, Russo discloses the method wherein said step (g) further comprises verifying that a predetermined number of said plurality of image darkness test lines have associated calculated average darkness values that exceed a darkness threshold value (column 6, lines 3-16, column 8, lines 36- 47, column 9, lines 1-67, column 10, lines 1-6, fig 4A,B and C, column 7, lines 1-20, column 8, lines 1-19, column 9, lines 1-28).

As to claims 10 and 26, Russo discloses the method wherein said step (g) further comprises verifying that eight of said plurality of image darkness test lines have associated calculated average darkness values that exceed a darkness threshold value, and wherein said plurality of image darkness test lines includes ten image darkness test lines (column 6, lines 3-16, column 8, lines 36- 47, column 9, lines 1-67, column 10, lines 1-6, fig 4A,B and C, column 7, lines 1-20, column 8, lines 1-19, column 9, lines 1-28).

As to claim 17, claim 17 recites similar limitation as claim 1 above and similarly analyzed except for the step of a camera that captures an initial fingerprint image at a nominal image integration time .... (fig 3, item 320 is considered to be sensor, column 5, lines 34-67); and a processor that performs an image darkness test and an image defination test as taught by Russo at (column 3, lines 1- 9, 39- 67, column 4, lines 33-51, column 5, lines 34-52, column 6, lines 33-51).

As to claim 37, Russo discloses a system controller for use in a fingerprint scanner; wherein said system controller performs an image darkness test (column 2,

lines 31- 38), and performs an image definition test (fig 3, item 225 is a processor which controls the sensor device 320, column 3, lines 35- 52, column 6, lines 32- 51).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5 and 21are rejected under 35 U.S.C. 103(a) as being unpatentable over Russo et al. (US. 6,330,345 B1).

Regarding claims 5 and 21, although Russo does not specifically disclose about the integration times comprise multiples of 1/7 of the nominal image integration time, such a limitations are merely a matter of design choice and would have been obvious in the system of Russo. Russo teaches determination of the image of the fingerprint acquired by array unit 210 of sufficient quality for identification purposes using four intermediate section as explained in column 5, lines 34-52. The limitations of claim 5 and 21 do not define a patentably distinct invention over that in Russo since both the invention as a whole and Russo are directed to improve the identification results.The intermediate steps for getting the resultant combined or integrated image is inconsequential for the invention as a whole and presents no new or unexpected results, so long as the improved ,

error free identification result is obtained. Therefore, lacking any criticality, it would have been obvious to a person skilled in the art that obtaining resulting image combining intermediate steps would have been a matter of obvious design choice.

5. Claims14 -16, 22, 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Russo et al. (US. 6,330,345 B1) as applied to claims 1- 5, 6-10,17-21, 23-26, 33-37 and 38 above and further in view of Bergenek et al. (US.6, 241,288 B1).

Regarding claim 14, Russo discloses a sensor device that accounts for device variabilities and adjusts for variable conditions that are present when imaging an individual's biometric feature a fingerprint image. Russo is silent about applying curve ridge to the fingerprint images.

Bergenek discloses a fingerprint identification system that identifies fingerprints more accurately than prior systems. The system comprises the method of:
(e) performing said step (c) after a first companding curve is applied to the fingerprint images (column 7, lines 17- 24). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Russo to include applying curve ridge to the fingerprint images. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Russo by the teaching of Bergenek in order to accurately and efficiently find a reference point in the image from where to start the identification or verification process, as suggested by Bergen at column 2, lines 17- 20).

As to claim 15, Bergen discloses the method further comprising the step of:

(f) performing the following steps when said step (c) results in an unacceptable darkness level (column 12, lines 50- 63):

(i) repeating steps (a) and (b) (column 5, lines 38- 46, 55-67, column 6, lines 1-21);

(ii) applying a subsequent companding curve to the fingerprint images captured in step (i) (column 7, lines 17-24); and

(iii) repeating step (c) (column 7, lines 17- 41).

As to claim 16, Bergen discloses the method further comprising the step of:

repeating said step (f) until said step (c) results in an acceptable darkness level (column 12, lines 50- 63).

As to claim 22, Russo discloses the fingerprint scanner wherein said camera captures subsequent intermediate fingerprint images at subsequent intermediate integration times until said processor performs and image darkness test and an image definition test that both result in acceptable image darkness and definition levels (column 3, lines 50- 67, column 4, lines 1- 5, column 8, lines 38 – 51, column 10, lines 2-13), respectively, for a single intermediate fingerprint image (column 3, lines 3- 12, 17-27, column 6, lines 3- 31, column 8, lines 38- 51, fig 3, item 320, is a sensor device which performs darkness test on fingerprint image (column 3, lines, 1- 9, 39- 67).

As to claim 30, Bergenek discloses the fingerprint scanner wherein said camera applies a first companding curve to said captured fingerprint images prior to said image darkness test (column 5, lines 65- 67, column 6, lines 1- 10, column 7, lines 17- 53).

As to claim 31, Russo discloses the fingerprint scanner wherein said camera captures an subsequent initial fingerprint image at a nominal image integration time and captures a subsequent first intermediate fingerprint image at a first intermediate image integration time when said image darkness test results in an unacceptable darkness level (column 2, lines 5-38, column 3, lines 50-67, column 4, lines 1-4, column 8, lines 38-51, column 10, lines 2-13);

wherein said camera applies a subsequent companding curve to said captured subsequent fingerprint images wherein said processor performs a subsequent image darkness test (column 2, lines 31- 38).

As to claim 32, Russo discloses the fingerprint scanner wherein said camera repeats the capture of subsequent initial fingerprint images, the capture of subsequent first intermediate fingerprint images, and application of subsequent companding curves, until an acceptable darkness level results (column 2, lines 5-38, column 3, lines 50-67, column 4, lines 1-4, column 8, lines 38-51, column 10, lines 2-13).

Allowable Subject Matter

6. Claims11-13, 27-29 and 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Other prior art cited

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Wada (US.6,445,811B1) discloses fingerprint image processing device and fingerprint image processing method.

Hsu et al. (US.6,134,340) discloses fingerprint feature correlator.

Irving et al. (US.6,658,164B1) discloses calibration and correction in a fingerprint scanner.

Houches et al. (US.5, 047,861) discloses method and apparatus for pixel non-uniformity correction.

Granfors et al. (US.5,657,400) discloses automatic identification and correction of bad pixels in a large area solid state X-Ray detector.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheela C Chawan whose telephone number is 703-305- 4876. The examiner can normally be reached on Monday through Thursday 7.30 a.m. to 6.00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Behaves Mehta, can be reached on (703) 308 - 5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3800.

BHAVESH M. MEHTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Sheela Chawan
Patent Examiner
Group Art Unit 2625
March 15, 2004